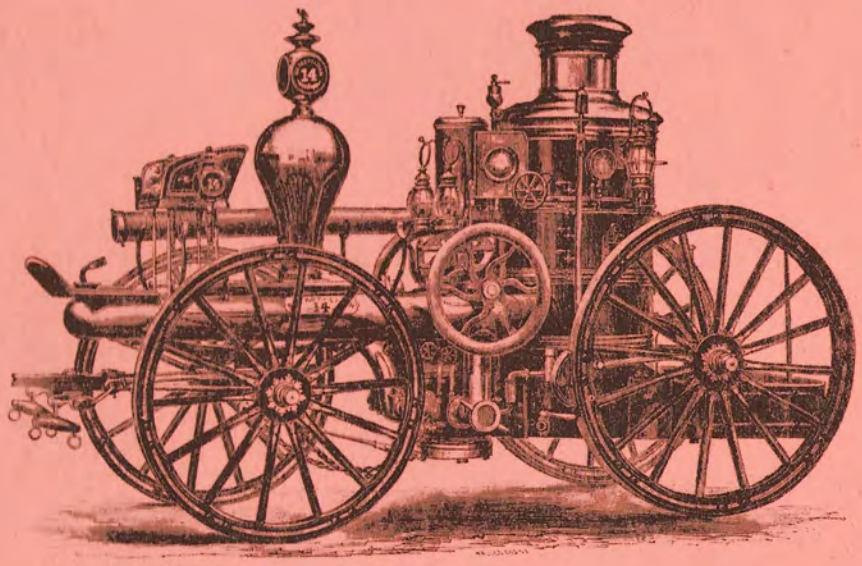
~Steam Fire Engines~

William King

1829 - 1896



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HISTORY

OF THE

AMERICAN STEAM FIRE-ENGINE

...BY...

WILLIAM T. KING

1896

AMERICAN FIRE ENGINE COMPANY,

SENECA FALLS, N. Y.: FOUNDED 1845.

CINCINNATI, OHIO. FOUNDED 1851.

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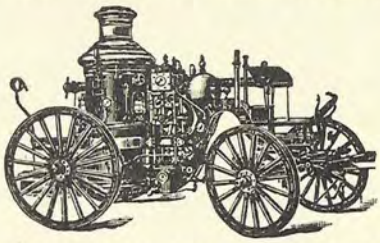

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THE LA FRANCE FIRE ENGINE COMPANY,

ELMIRA, N. Y.

MANUFACTURERS OF

Piston and Rotary Steam Fire Engines

..AND..

HAYES' AERIAL EXTENSION HOOK AND LADDER TRUCKS.

PREFACE.

So little honor was done the man who first forged harness for the giant, Steam, that even the time of his death is unknown and his last resting-place remains unnoticed.

For nearly two thousand years, the potential power of water in the form of steam was known to mankind. Generations of scholars and scientists found the subject of steam an amusing theme for learned speculation or for pleasing experiments. Philosophers settled down to the belief that steam could not be applied to commercial purposes. Theoretical investigators had given up steam as beyond their control, when Thomas Newcomer, working blacksmith, directed his attention to it. This was in the beginning of the eighteenth century, when mechanical skill was at a low ebb.

The first engine was a piston, working in a cylinder and transmitting power to a walking beam. Although it was exceedingly crude, it possessed the essential principle of all succeeding steam-engines, the cylinder and piston.

Before any radical improvement was made on the engine, they were built and used successfully for pumping purposes all over Europe, many of them coming to America. Newcomer was really the father of mechanical engineering; yet the Royal Society for the Promotion of Science did not think his work was worthy of notice, and his disciples, who are now legion, cannot point to the spot where his dust reposes. Unfortunately, he lived in a time when it had not become the fashion to honor the heroes of industry.

A great many steam fire-engines have been built which proved a failure, which might have proved good, practical machines, had they not fallen into the hands of men who were prejudiced against that particular build, or through a lack of knowledge how to run and care for them. The man in charge should be a practical engineer; not, necessarily, a machinist, but a man who is quick to think and act. He should have a thorough knowledge of steam and steam machinery; should be capable, also, of adjusting all the different parts of his engine, and telling whether they are in order or not. He should fully understand the causes of deterioration in the boilers of this kind of machines and the best means of protecting them from the evils which endanger their safety and limit their usefulness. He should have, if not a thorough, a tolerably good knowledge of hydraulics and hydraulic machines and be capable of determining their capacity, and understanding the strains to which they are subjected when in use.

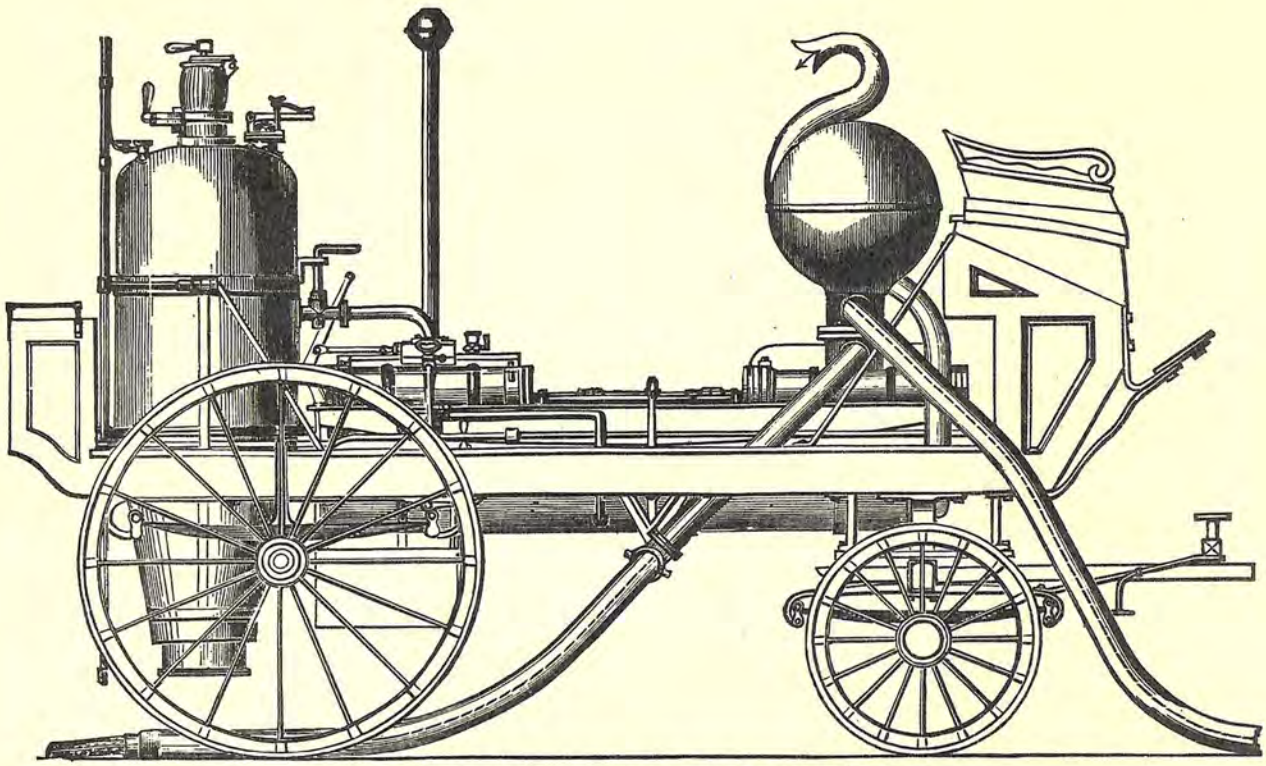
These qualifications, to a great extent, have been heretofore overlooked, and the reader, if a fireman, needs not to be told the reasons why.

That the duties which this class of men is expected to perform are of a very important character, all will admit; and it would be difficult to assign any reasonable cause why they should not be encouraged to qualify themselves for their faithful and intelligent performance. And while it is a fact that many of the men in charge of steam fire-engines are capable and intelligent engineers, yet, unfortunately, they are not all so; nor will they ever be so as a body until they receive their appointments on real merit instead of through political influence, and are retained in the service during good behavior and encouraged to improve themselves.

History of the American Steam Fire-Engine.

GEORGE BRAITHWAITE—LONDON, 1829.

This history is supposed to speak only of American steam fire-engines; but it is only just and proper that a short account should be given of the first steam fire-engine



FIRST STEAM FIRE-ENGINE EVER BUILT—LONDON, 1829.
The "Novelty," George Braithwaite, Builder.

ever built in the world, in order to give the reader a better idea of the great progress made in this useful piece of machinery.

To England belongs the credit of conceiving the idea, and to America belongs the honor of perfecting the invention; and, as a result, the American steam fire-engine of to-day, in symmetry of parts, elegance of finish and efficiency of action stands unrivalled by any other in the world.

In the year 1829, the first steam fire-engine ever built was made in London by George Braithwaite, a celebrated hydraulic engineer, assisted by Capt. John Ericsson, the great inventor, who was afterwards made famous in this country by designing the ironclad *Monitor*.

This first steam fire-engine was named "Novelty"; weight, 2¼ tons; and rated as ten horse power. The pumps measured 6½ inches in diameter and steam cylinders, 7½ inches in diameter, were double and placed horizontally; each steam piston, and that of the pump, being attached to one rod. The waste steam from the cylinders was sent through the feed water tank by means of two coiled pipes; thus warming the feed water before it was pumped into the boiler, which was vertical, with fire-box tapering downward. The fuel was burned on the forced combustion principle; that is to say, it was fed into the boiler from the top, and was burned in a closed fire-box, the products of combustion passing from the furnace to the chimney by means of a long snake-like tube which extended below the water line several times from end to end of the long barrel of the boiler, and finally passed out at the forward end, near to and above the air-chamber of the pump.

This machine would throw 200 to 250 gallons of water per minute to the height of 90 feet. It was run to a number of fires in London and abundantly illustrated its great value; but every effort of its builders to secure its adoption in the fire service of the metropolis proved in vain, as both the public and the fire insurance companies were bitterly opposed to its use. Despite the refusal of the English to take hold of the novel fire extinguishing apparatus, Braithwaite and his partner succeeded in convincing less prejudiced communities of the utility of their machine and built several more.

The one that attracted the most notice was that built for the king of Prussia, in 1832, to protect the public buildings in Berlin. This was his fourth engine and it was named "Comet." The boiler was on the same plan as that of the "Novelty," with few exceptions. It had double cylinders and pumps working horizontally; steam cylinder 12x14, pumps 10½x14, and would run from 18 to 25 strokes per minute, through from one to four lines of hose. Steam could be got up to a pressure of 70 lbs. in 20 minutes, and through a 1¼ in. nozzle, a stream was ejected to the height of 115 ft. It consumed three bushels of coke per hour. Its cost was £1,200 or $6,000.

The success of this engine brought Braithwaite much complimentary notice in Prussia, but the Londoners would have none of the new-fangled machines and stuck to their hand-tubs, of which they use a great many at the present day.

His fifth and last engine was built in 1833, and was only an experiment. The boiler was of locomotive pattern. All of his engines were horizontal, without fly-wheels, and with straight frame.

Discouraged and disheartened he gave up his invention, and seven years afterward Americans took the matter in hand, and, although it was an up-hill fight, at last succeeded in convincing the world that steam was far superior to muscle.

LA FRANCE MANUFACTURING CO. — 1875.

The La France Fire Engine Co., of Elmira, N. Y., taking into consideration that they are the youngest of successful firms now doing business, and have sold during their short career over 350 machines, goes to show that their engines are well up to the standard. This firm first commenced building steam fire-engines in 1875.

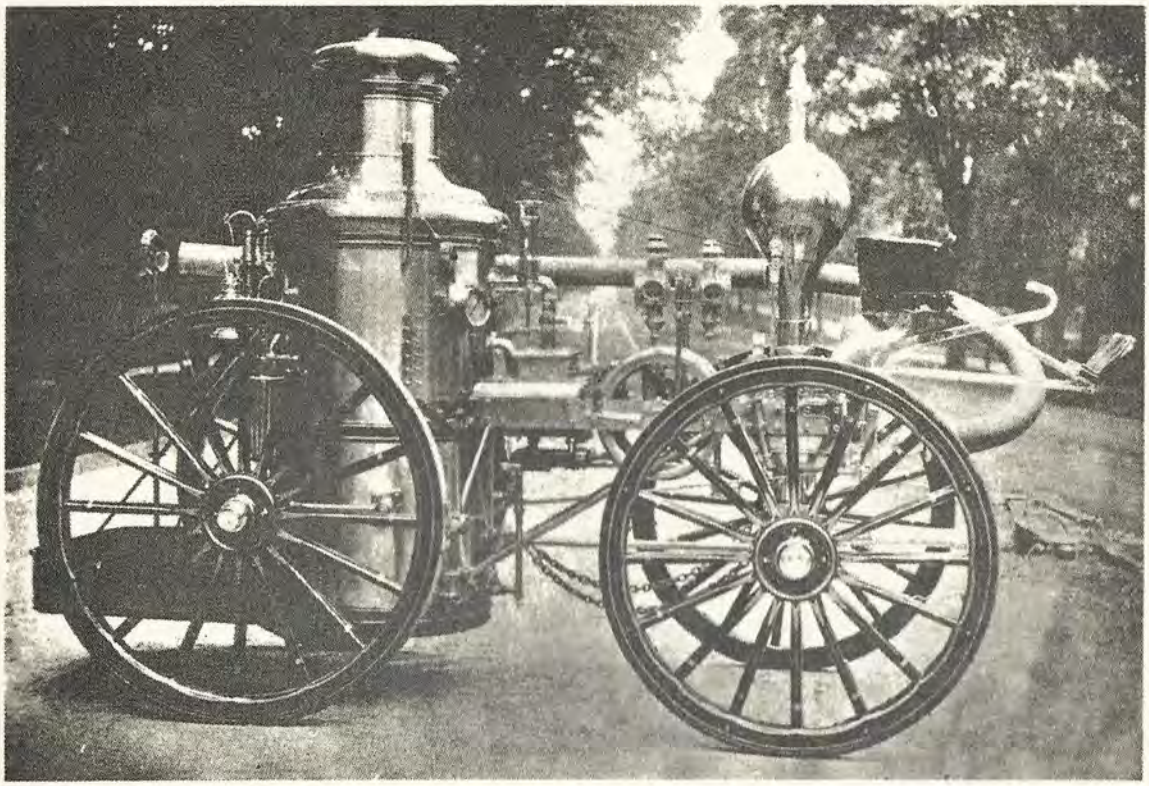
AMERICAN FIRE-ENGINE CO. — 1891.

The American Fire-Engine Co., of Seneca Falls, N. Y., and Cincinnati, Ohio, was incorporated under the laws of New York State on December 12, 1891, with a capital of $600,000, and is, at the present time, the most extensive corporation in the manufacture of Engines and Fire Department Supplies in the world. This company was formed by the consolidation of the following well known firms in the manufacture of Steam Fire Engines: Silsby Manufacturing Co., of Seneca Falls, N. Y., Ahrens Manufacturing Co., of Cincinnati, Ohio, Clapp & Jones Manufacturing Co., of Hudson, N. Y., and the Button Fire-Engine Co., of Waterford, N. Y., including real estate, machinery, tools, patterns, patents, and good will, with the following officers and managers: —

Hiram H. Nieman, President; Du Bois Collier, Vice-President; Charles T. Silsby, Treasurer; William S. Silsby, Secretary; Chris Ahrens, Mechanical Engineer; Horace Silsby, G. F. Hawekotte, Du Bois Collier, George E. Holroyd, Managers.

The engines built by these companies during the past 35 years are too well known to need more than a passing mention, as they have all been referred to in other parts of this history. Their manufactories are now conducted under one management, with the mechanical experience of the several companies consolidated.

These well known types of engines are not only built in a more improved manner, but, with the combined mechanical skill now obtained, and having at their disposal all the special features of these engines, protected by patents heretofore controlled by the respective companies, they are enabled to satisfy the wishes of any purchaser by combining, in any one machine, such points of excellence and details of construction as may be desired. Since the consolidation of these four firms into one, a new piece of apparatus has been constructed and called the "Columbian Engine." This machine has been designed for service in the suburban fire stations of large cities, but is equally well adapted for use in smaller towns, combining, as it does, two distinct pieces of fire apparatus in one. The engine is built with double cylinders and pumps, placed vertical and of the Ahrens type. From the engine, extending to the extreme forward part, is a large and handsomely finished box, capable of carrying from 600 to 1000 feet of rubber lined cotton fire-hose and supplied with suitable rollers for running out the same. When the hose-box is closed, it may be used as a seat for the firemen, and as many as ten men can ride on the engine, if desired.



BUILT BY ALLERTON & STEVENS.

ALLERTON & STEVENS.

Allerton & Stevens of New Haven, Conn., built only one engine, about the year 1885. This machine was a double horizontal, and, as the engraving shows, was a beautiful engine. The reason of their discontinuing the business is not known.

WATTS G. CORY, of Amsterdam, N. Y., built but one Steam Fire-Engine about the year 1873. He died shortly afterwards. This machine was vertical with link motion. This steam-cylinder measured 7 inches in diameter, pump 5 inches in diameter with 10 inch stroke of piston, and weighed 5,000 lbs. This engine is still in service in a small town in the central part of New York State, and is highly spoken of.

KNOULSON & KELLY, of Troy, N. Y., built one small engine in 1875 for the Troy Water Works to use for pumping out the water mains, etc., also to be used, if necessary, for fires.

THE SHEPPARD IRON WORKS, of Buffalo, N. Y., built several engines which were horizontal and double, with link motion.

SUGGESTIONS TO ENGINEERS.

The following suggestions were at one time given to engineers running Amoskeag Engines. These same directions will apply to almost every Piston Engine.

I.

In laying your fuel in the fire-box, first lay plenty of shavings, then light, dry kindling wood, filling your furnace full, which in most cases will give you steam enough by the time you arrive at a fire to commence work, providing you light your fire when you leave the house, which, as a general rule, is advisable.

II.

If you use coal, be careful to keep a thin fire, and not clog it. Use the coal in as large lumps as possible, and do not break it up unnecessarily in the furnace. The best coal for this purpose is a clean cannel, in lumps, free from dirt and dust.

III.

Be careful not to let so much fire collect under your engine as to burn the wheels. When working for a long time at fires there is some danger of doing so.

IV.

The Amoskeag boiler is an upright, tubular boiler, with a submerged smoke-box and fire-box surrounded with water. When the engine is running, the water in the boiler should be carried so as to stand at the third gauge-cock, which is placed near the top of the tubes, and it should never be carried below the centre of the tubes, at which point the first gauge-cock is located.

V.

Avoid using an unnecessary amount of steam. The tendency is to use more than is required. From sixty to eighty pounds is as much as you will generally require to do good fire duty.

VI.

The engine has two suitable feed-pumps for supplying the boiler with water. One of these pumps should be worked nearly all the time, in order to keep the water in the boiler at the proper height, and to preserve an even pressure of steam.

VII.

If brackish water is used for supplying the boiler, or if the boiler becomes foul from long use without being blown off, it is likely to foam or prime. If foaming occurs while the engine is working at a fire, it may be prevented or diminished by opening the surface blow-off cock, which is located between the third and fourth gauge-cocks, and blowing off from the surface of the water the scum and oily matter which usually causes foaming. In this way, the difficulty can generally be prevented without any serious interruption in

VIII.

The running-gear and every part of the engine liable to disarrangement or accident should be thoroughly examined every time after the engine has been out of the house, whether it has been worked at the fire or not.

IX.

Whenever your engine is repaired, try to help do it yourself, as by so doing you get a familiarity with it that you can obtain in no other way.

NOTE. — These suggestions are made more particularly for the benefit of engineers who have not had much experience in running engines.